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HERPETOLOGICA

A journal devoted to the study of reptiles and amphibians

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Vol. 2, No. 5 Chicago, Illinois July 10, 1943

NATRIX ERYTHROGASTER ERYTHROGASTER IN THE NORTHEASTERN PART OF ITS RANGE

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That the red-bellied water snake, ***Natrix erythrogaster erythrogaster,*** occurs in small, isolated colonies far to the north of its (present) continuous range has been amply shown in recent years. Clark first reported *erythrogaster* from southern Michigan in 1903, and within the last decade it has been found living in two places in Ohio (Conant, 1934), and also at Clark's locality near Olivet, Michigan (Clay, 1934). Verbal evidence indicates that still other colonies exist, or did exist, in the till plains of Indiana, Ohio, and Michigan, both in Mississippi and Great Lakes Drainage. Clay (1938, p. 181) also included extreme southern Wisconsin in defining the range of *erythrogaster,* but he mentioned no specific locality or specimens.

Dunn and Allen (1935), on the basis of snakes in the collection of the Academy of Natural Sciences of Philadelphia, attempted to show that a similar condition exists in the northeastern part of the range. As evidence they offered ANSP 5080, from Waynesburg, Greene County, Pennsylvania, and ANSP 5033, 5034, and 5036, from "near" Philadelphia. Since *erythrogaster* is essentially a snake of the coastal and central lowlands, its presence in a portion of Pennsylvania that is characterized by high elevations and marked relief (Greene County) has seemed little short of remarkable.

During recent studies on water snakes in the Academy collection, I have had occasion to look into the matter, and I find that actually there are two specimens bearing the number 5080. One is a small *Natrix sipedon sipedon,* stored in the same bottle with another snake of the same size and species (ANSP 5079). Both of these, according to the catalogue, were collected at Waynesburg by S. N. Rhoads in 1894. The other tag No. 5080 is a duplicate and entirely unsupported by data; it is attached to a specimen of *erythrogaster.* Hence Waynesburg, Greene County, Pennsylvania, may be stricken from the list of localities for *erythrogaster.*

Concerning Nos. 5033, 5034, and 5036 (all small juveniles) from "near" Philadelphia, there is no definite proof that these came from Philadelphia, nor is there proof that they did not. Philadelphia, lying partially in the coastal plain, is a much more likely locality for *erythrogaster* than is Waynesburg. The complete absence of specimens, however, from New Jersey, Delaware, other parts of Pennsylvania, and (until recently) from Maryland — despite intensive collecting for a century — casts some doubt upon that possibility. The three specimens in question are ascribed (in the Academy catalogue) to Hallowell and Leidy. So also is a considerable series of *sipedon* with adjacent catalogue numbers. These latter snakes are of diverse sizes and, to judge from the variation in pattern, from a number of localities as well. All may have been collected "near" Philadelphia, but there also is the possibility that a miscellaneous assortment of water snakes, without very definite data, may have been consigned to a single container and credited to the collectors after their deaths. The herpetological collection at the Philadelphia Academy was not catalogued until nearly 1900; Hallowell died in 1860 and Leidy in 1901. That it was not recognized, at the time of cataloguing, that there were two kinds of snakes involved, is shown by the fact that they all are listed as *sipedon,* and that the numbers 5033, 5034, and 5036 lie in the midst of the series, which runs from 5021 to 5039. Until additional evidence can be secured it seems advisable to consider the Philadelphia record for *erythrogaster* as doubtful.

Recent collecting on the Del-Mar-Va Peninsula (Delaware and the Eastern Shore Counties of Maryland and Virginia) indicates that the present northeasternmost limit of range of *erythrogaster* may be well to the south of Pennsylvania. On the Peninsula this snake has twice been taken along the Pocomoke River—once near Willards, Maryland (a large female 1347 mm. in length, on May 24, 1941), and once near Powellville, Maryland (a juvenile—with spotted pattern—264 mm. long, on May 7, 1942). According to residents of the region, red-bellied water snakes are common along and near the Pocomoke which, for many miles, is bordered by a narrow belt of dense river swamp, choked with semi-aquatic vegetation and characterized by bald cypress, red maple, and sweet gum. This same type of habitat occurs along other streams of the region. *Natrix e. erythrogaster* is known to live in similar habitats in southeastern Virginia, and farther south it also very frequently is associated with bald cypress. To the north of the Willards locality, in southern Delaware and adjacent parts of Maryland, cypress and other southern plants become first rare and then absent altogether and it is conceivable that suitable habitats for *erythrogaster* are lacking, and that this snake here reaches the limit of its range. Unlike many other southern animals it apparently has failed to reach southern New Jersey, a state which, in historic times at least, has entirely lacked cypress swamps or cypress-bordered streams. Whether *erythrogaster* has a spotty distribution in the northeast, occurring in small, isolated habitats, different from those in the continuous portion of its range, remains to be seen.

Through the kindness of John Werler, Richard Knox, Charles Wonderly, and Amos Taylor, all now in the armed services, I have been able to examine a small series of both *erythrogaster* and *Natrix s. sipedon* (many of them alive) from southeastern Virginia and adjacent North Carolina. The specimens of *erythrogaster* from that region agree in scutellation and coloration with those from Del-Mar-Va. The adults are uniform medium reddish-brown above, and uniform orange-red below; juveniles have dark brown blotches on an orange-brown ground color, their bellies are slightly more yellow than those of adults. The eye is large in all, it being as great (usually

greater) in diameter than the distance from the nostril to the orbit. In a total of 10 specimens the ventrals vary from 146 to 153; subcaudals in 4 males (all those with perfect tails) vary from 79 to 86, and in 3 females, all have 71.

In a series of 15 specimens of *sipedon* (both from southeastern Virginia and the two Del-Mar-Va localities in which *erythrogaster* has been taken) the eye is not so great in diameter as the distance from the nostril to the orbit. The number of ventrals varies from 136 to 143; subcaudals in 4 males vary from 72 to 78, and in 2 females their number is 60 and 64, respectively. Along the Pocomoke River *sipedon* reaches a very large size; one adult female equalled the record for the species (4 ft. 3 in.). Several others were nearly as large.

In the Dismal Swamp region *sipedon* shows indications of intergradation with *Natrix s. fasciata.* In one large male there are no lateral blotches, the dorsal saddles reaching the ventrals throughout the entire length of the body. In several there are tendencies toward the development of brownish streaks from the eye to the angle of the mouth, and the bellies of some show a concentration of the red pigmentation which also is characteristic of *fasciata.*

SUMMARY

Evidence is presented indicating that old records of *Natrix e. erythrogaster* in Pennsylvania are in error. It is postulated that this snake reaches the northeasternmost limit of its range in southern Delaware and adjacent Maryland.

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